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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/712,976	11/13/2003	Brigette Quenet	8707-2166	7349

7590 10/10/2006

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EXAMINER	
FLORY, CHRISTOPHER A	

ART UNIT	PAPER NUMBER
3762	

DATE MAILED: 10/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/712,976	QUENET ET AL.	
	Examiner	Art Unit	
	Christopher A. Flory	3762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 November 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *11/13/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

2. The abstract of the disclosure is objected to because it exceeds the 150-word limit. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Sun et al. (US Patent 5,778,881, hereinafter referred to as Sun'881).

Regarding claims 1-4, Sun'881 discloses an active medical device for analyzing a filtered and digitized electrocardiographic signal (ABSTRACT; Fig. 5, ADC component;

column 12, lines 42-57) comprising means for memorizing the digitized signal in memory (Fig. 5, memory 64); extracting means for decomposing the signal into N elementary waves, each comprising a bump function (Figs. 1 and 3; Fig. 5, W.T. 62; column 7, lines 1-60; ABSTRACT); and classifying means for recognizing at least one characteristic parameter of each elementary wave and allotting a label from a plurality of predetermined labels (ABSTRACT; Fig. 1; column 3, lines 10-30). It can be seen from Fig. 1 that each wavelet transform, e.g. the data taken for the p-wave, constitutes a bump function having three intervals including a fist monotonic parameterized function (between the 3rd data sample marked 'b' and the first marked 'p'), an affine function (between the two data points marked 'p'), and a second monotonic parameterized function (between the second 'p' and the following 'b' data point). Further it is commonly known that the ECG signal as disclosed in Sun'881 is defined as a monodimensional time function.

Regarding claim 5, the Sun'881 device must inherently have a subtracting means for withdrawing at least one of the N elementary waves from the memorized signal in order to discriminate between the waves, in order to transform each wave individually, and in order to subject each set of saved W.T. coefficients to the HMM algorithm (ABSTRACT). Sun'881 further discloses matching each of a recognized Q-wave, R-wave, S-wave and T-wave to the individualized training templates of the HMM model (column 2, line 54 through column 3, line 30), another step which inherently requires withdrawing individual elementary waves out of the memorized ECG signal.

Regarding claims 6 and 7, Fig. 1 of Sun'881 clearly shows that the N elementary waves are the five P, Q, R, S and T waves of the ECG signal.

Regarding claims 8-11, Sun'881 discloses a means for determining a variability over time of at least one of the amplitude of a T wave, time interval between the QRS and T wave, a PR interval, and amplitude of the P wave (column 1, line 28 through column 2, line 16; column 4, lines 5-45). Sun'881 also discloses determining a correlation between at least two of the elementary N waves (column 2, lines 2-3).

Regarding claims 12, 13 and 18, the wavelet transform (W.T.) analysis disclosed in Sun'881 (see columns 9-17 specifically) is an example of a PCA analysis and projection system using orthogonalisation, where the axis of projection is inherently dynamic and has a maximum amplitude, as even a theoretical axis continuing to infinity has a maximum amplitude of infinity.

Regarding claims 14-16, it can be seen in Fig. 1, and from any diagram of a PQRST waveform, that each of the P, Q, R, S, and T waves comprise a bump function defined by a rising side and falling side, each of which is a half-Gaussian function, and either a point in time or a length of time in between defined by an affine function that has a null slope. A single data point representing an instantaneous peak is nonetheless a mathematical function with a null slope. Therefore, it is considered that Sun'881 discloses an affine function with null slope (as can be seen in the representative P wave of Fig. 1) and first and second monotonic functions defining half-Gaussian functions.

Further regarding claim 16, Sun'881 discloses the characteristic parameters of standard deviation and peak amplitude (column 16, lines 19-48; column 16, line 55 through column 17, line 10).

Regarding claims 17 and 19, Sun'881 discloses a library containing a plurality of predetermined bump types, means for selecting the bump type most relevant to the signal to be decomposed, and means for minimizing a variation between the signal and the N bump-types (column 3, lines 1-30; column 7, lines 48-65; column 16, lines 19-48). Sun'881 also discloses non-linear optimization (column 3, lines 46-62).

Regarding claim 20, Sun'881 discloses means for implementing hidden Markov models (ABSTRACT).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher A. Flory whose telephone number is (571) 272-6820. The examiner can normally be reached on M - F 8:30 a.m. to 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Angela Sykes can be reached on (571) 272-4955. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Christopher A. Flory

28 September 2006

George Manuel
Primary Examiner